

~~SECRET~~ CONFIDENTIAL 16-1888**Office Memorandum • UNITED STATES GOVERNMENT**

TO : The Files

FROM : [REDACTED]

Jr [REDACTED]

SUBJECT: Contract (RD) XG-578, Task No. 7 - ET-2 - Trip Report

1. A visit was made to the facilities of the [REDACTED] during the period 19-20 July 1954 to discuss matters pertaining to the subject contract.

2. An engineering model of the ET-2 was developed under Task 1 of Contract (RD) XG-578. With the withdrawal of 1952 funds, Task Order No. 7 was negotiated with 1954 funds to permit the Contractor to provide the three prototype units required by Task Order No. 1. Although a laboratory evaluation of the engineering model is yet to be accomplished, the need for redesign of the prototypes for improved functional characteristics has been apparent and has been previously discussed with the Contractor. An outline for such improved functional characteristics has been provided in the Contractor's "Program for Three Prototype ET-2 Units" which has been made a part of the new task.

3. Those present for a discussion of the subject contract and equipment were:

4. The redesign of the solenoid stepping mechanism has been abandoned in favor of a completely new approach to the noise problem which appears to simultaneously provide a means for affecting further improvements to the unit, through simplification. The high current solenoid is to be replaced with a miniaturized 1 RPM clutch. The shaft of the tape drive motor is connected to one clutch "plate" and runs continuously. The second clutch plate is connected to the tape drive and held stationary with a "stop". The upstroke of a printing key energizes a small magnet which momentarily releases the stop and permits a single revolution of the tape drive shaft which is geared down 6 to 1 to permit a .5" advance of the tape to provide the stepping function. When transmitting the magnet is energized continuously.

5. The Contractor utilized an auto-transformer with a floating ground in the engineering model because of the heavy "slug" of current required for the solenoid. This was done in the interests of space and weight since an isolating transformer to carry this high solenoid current would have been twice the size of the auto-transformer. With the elimination of the solenoid an isolating transformer of satisfactory weight and dimensions can now be used.

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Trip Report

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6. Because an operator cannot see what he is printing it is difficult to know when to operate the line feed and carriage return keys. The Contractor will provide a simple mechanical arrangement working off the stepping clutch to provide a rotating arrow indicator or neon bulb that will signal the operator to actuate the line feed and carriage return keys.

7. The keyboard arrangement of the engineering model is that of the standard teletype keyboard. It is felt that a greater simplification of the keyboard for agent use would provide letters in an alphabetical sequence and further that the numbers be provided on separate keys to eliminate the need for upper and lower case shifting. The Contractor agrees that a rearrangement of the keyboard is simple and will study the possibility of providing separate number keys in addition to reducing the overall dimensions of the key and their travel depth (which is excessive).

8. The Contractor was queried about the possibility of providing an auxiliary means for running the tape loop at a high speed to reduce the delay time currently necessary between the printing of a short message and its transmission since the complete tape loop must be run before the transmission can begin. The Contractor was not very enthusiastic since such a requirement might require a special motor, but would give the matter some thought. It now appears that an arrangement might be provided for a second gear train. The present motor runs a 360 RPM and is geared down to 60 RPM at the tape drive. This 6 to 1 ratio could be increased to 3 to 1 or 2 to 1 with a second gear train that could be engaged with a lever that would be operated manually. This possibility will be discussed with the Contractor on the next visit.

9. [redacted] a full time electrical engineer on the project, has been inducted into the Army and has been replaced by a [redacted]. [redacted] was hired last Friday. He was gaining ET-2 waveform information with the new Tektronic scope which was purchased for the project. [redacted] a senior mechanical engineer, will work part time on the project in a dual capacity with [redacted] and a mechanical engineer will be provided as his full time assistant.

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10. [redacted] has replaced [redacted] in the Contract Section of [redacted]. [redacted] is now with the Arlington, Virginia Offices of [redacted].

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11. It was agreed that the engineering model could be returned to [redacted] via the Arlington Office in approximately one month.

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